

**RESOLUTION NO. 171-02-19 ADOPTING THE REVISED WATER CONSERVATION & DROUGHT CONTINGENCY PLAN FOR LAGUNA MADRE WATER DISTRICT**

**WHEREAS**, the Laguna Madre Water District (District) previously adopted a Water Conservation and Drought Contingency Plan on May 10, 2017; and

**WHEREAS**, it is necessary that a Water Conservation and Drought Contingency Plan be updated and adopted by the District; and,

**WHEREAS**, Section 11.1271 of the Texas Water Code and applicable rules of the Texas Commission on Environmental Quality and Texas Water Development Board require all public water supply systems in Texas to prepare a water conservation plan; and,

**WHEREAS**, as authorized under law, and in the best interests of the customers of the Laguna Madre Water District, the Board of Directors deems it expedient and necessary to establish certain rules and policies for the orderly and efficient management of limited water supplies during drought and other water supply emergencies; and

**WHEREAS**, The Board of Directors further finds, determines and declares that the meeting at which this resolution has been considered and acted upon was open to the public and public notice of the time, place and subject of said meeting was duly given, all as required by Texas Water Code Ann. 49.063; Now therefore,

**BE IT RESOLVED**, by the Board of Directors of the Laguna Madre Water District that:

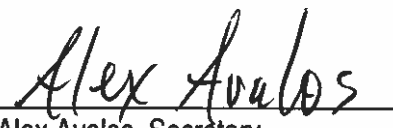
**SECTION 1.** The Revised Water Conservation & Drought Contingency Plan attached hereto is hereby adopted as the official policy of the Laguna Madre Water District.

**SECTION 2.** The General Manager of the Laguna Madre Water District and his/her designee are hereby directed to implement, administer and enforce the Revised Water Conservation & Drought Contingency Plan.

**SECTION 3.** This resolution shall take effect immediately upon its approval.

**PASSED AND APPROVED** this 13<sup>th</sup> day of March 2019.

ATTEST:

  
\_\_\_\_\_  
Alex Avalos, Secretary

  
\_\_\_\_\_  
Scott Friedman, Chairman



## Water Conservation and Drought Contingency Plan

### Board of Directors

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HERB HOUSTON, JR.	-	VICE-CHAIRMAN
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## Laguna Madre Water District

105 Port Road  
Port Isabel, Texas

Revised February 27, 2019

Prepared By:

Noe Cantu Jr. and Charles Ortiz

*Mission Statement: To proactively serve our customers by providing reliable, safe, high quality water and wastewater services.*

*The Water Conservation Plan was revised by Laguna Madre Water District pursuant to the Provisions of the Texas Administration Code Chapter 288, Water Conservation Plans, Guidelines, and Requirements.*

# Water Conservation Plan for the Laguna Madre Water District

2019

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# Laguna Madre Water District Water Conservation and Drought Contingency Plan

## 1.0 Introduction

The Water Conservation and Drought Contingency Plan (WCDC Plan) has been revised by the Laguna Madre Water District (LMWD) pursuant to the provisions of the Texas Administrative Code Chapter 288, Water Conservation Plans, Guidelines and Requirements. According to TAC Rule 288, conservation means “those practices, techniques and technologies that will reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water, or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses”. The Texas Commission on Environmental Quality (TCEQ) is responsible for overseeing these plans.

LMWD has previously submitted Water Conservation Plan to TCEQ & Texas Water Development Board (TWDB), as required by state law, as approved by LMWD on May 10, 2017 via Resolution No. 147-05-17. The current revision is proposed to include Raw Water service in drought contingency plan.

## 2.0 Service Area and System Evaluation

The Laguna Madre Water District (LMWD) provides water and wastewater services to the City of Port Isabel, the Town of South Padre Island, the Village of Laguna Vista and the unincorporated area of Laguna Heights. Laguna Heights is registered Colonia in the State of Texas and it is an economically distressed community such as Port Isabel.

The LMWD maintains its own water supply system from the Rio Grande River to the two Water Treatment Plants. The raw water system includes three pump stations, 3 reservoirs and 34 miles of pipeline (Figure 1: Laguna Madre Water District Service Area).

Raw water is pumped from the Rio Grande River under LMWD’s allotted water rights of 7,278.598 acre feet. This raw water is pumped via the LMWD’s raw water transmission line from the Rio Grande River to Water Treatment Plant’s 1 & 2. Water Treatment Plant 1 is a 4.1 million gallon per day plant, located in Port Isabel, Texas. Water Treatment Plant 2 is an 8.0 million gallon per day plant, located in Laguna Vista, Texas. Once the raw water is treated, it is pumped into 5 elevated tanks, 2 ground storage tanks, 2 underground storage clear-wells and distribution pipes. The total capacity of the storage tanks is 4.175 MGD.

### *Water availability and usage:*

- Current authorized amount for LMWD is 7,278.598 Acre-Feet (AF) of Municipal Water Rights. As of Feb 7, 2019, TCEQ is reviewing amendment to Water Right Adjudication Certificate 23-0850-000 to increase authorized amount by 234.794 acre-feet per year for a total amount of 7,513.392 AF/Year. Under drought conditions, TCEQ Watermaster may prorate authorized amount up to 1,750 AF/ Year for a total maximum of 5,763.392 AF/YR. When Falcon and Amistad combined

balance is less than 50% capacity, the District authorized amount increases/ decreases by 145.8 AF for each percentage change +/- in capacity.

- The LMWD uses an average of 5723.33 Acre-Feet per year of Municipal Water Rights
- The LMWD uses 808 – 930 Acre-Feet of water for irrigation per year.

## 2.1 Raw Water Source and Delivery System

Currently, the only raw water source for the LMWD is the Rio Grande River. This region of Texas is facing steady growth and diminishing water supply.

Because of the increasing cost of delivering raw surface water from the Rio Grande River and the desire for alternative sources, the LMWD decided to evaluate the cost and feasibility of developing a Water Reclamation and Reuse Facility. This will reduce withdrawals from the Rio Grande and would more feasible than the desalination of seawater.

## 2.2 Raw Water System and Use

Raw water is diverted out of the Rio Grande through three pumps, with a capacity of 14.8 MGD per pump. There are five miles of 42-inch concrete pipeline leading to Reservoir 4. Reservoir 4 has a 610 Acre-Foot storage capacity with a 15 MGD pumping capability. 10 miles of 36-inch pipeline connects this reservoir to Cuates pump station, east of the City of Los Fresnos. The water from Reservoir 4 can be gravity fed or pumped to Cuates Pump Station. A by-pass exists to feed directly to Reservoir 3 if needed. In December 2008, as part of a line replacement program, LMWD replaced one thousand linear feet of 36-inch concrete pipeline to help minimize water loss.

Cuates Pump Station feeds water in to two pipelines (16 and 24-inch) that lead to Reservoir 3 at WTP No.2. Reservoir 3 has a storage capacity of 230 acre-feet and is the last settling reservoir before treatment at WTP No.2.

Water Treatment Plant No.2 has a pump station that sends water to Reservoir 1, which is the source water for WTP No.1. Water is fed through a 16-inch and a 15-inch line into a 30-acre-foot capacity reservoir.

The South Padre Island Golf Course currently buys raw water from LMWD; averaging 10,142,566 gallons per year from 2014-2016.

As part of the Water Management System, the Water Plant Manager accounts for water pumped from the Rio Grande, to the treatment plants and water system sales.

## 2.3 Treated Water System and Use

Water Treatment Plant No.1 was built 50 years ago, and substantially upgraded in 2006. The plant serves to supply peak demands, particularly in the summer months and is typically shut down during the fall and winter. The plant has an overall capacity of 5.0 MGD, however it is limited to 4.1 MGD in production. Its limitation is based on hydraulic bottlenecks and fallacious orifices. WTP No.1 normally serves Port Isabel and Laguna Heights, Texas.

Water Treatment Plant No.2 was built in 1985 and is the main facility for LMWD water production. In 2013, the filtration system was upgraded from conventional rapid sand filters to an 8.0 MGD Microfiltration system. This plant serves Laguna Vista, Long Island Village, and South Padre Island through-out the year along with Port Isabel and Laguna Heights when WTP No.1 is off.

The LMWD area has potential to grow, particularly north of South Padre Island and west of Laguna Vista. Spring breakers and summer tourism can result in extended periods of peak water usage adding to the usage by existing customers.

#### *Hazards:*

Because of our proximity to the Gulf of Mexico, hurricanes can be the most frequent natural hazard affecting the area. The economic and social consequences due to these types of events can be so severe that they may be incomprehensible.

The LMWD suffered \$2,099,468 in direct damage and approximately \$1.7 million in 2008-2010 revenues lost. Six months out of every year hurricanes are a threat for LMWD and are a constant reminder of how fragile the system can be.

In 2004, LMWD conducted a *Comprehensive Plan for Water and Wastewater Facilities* (CPWWF). This plan identified a number of treatment and collection system facilities of “high risk”; meaning they could cause serious health and environmental problems from exceeding capacity. LMWD, in 2005, began implementing some of the major repair recommendations received for WTP No.1.

The *Asset Management Plan* (AMP), completed in 2008, reinforced the need for replacement and rehabilitation throughout the LMWD service area.

Water Distribution System: The LMWD has been working, “system wide”, to improve the reliability and efficiency in the distribution system. This will ensure continued quality and reliability in the essential services LMWD provides. One of the primary recommendations in the CPWWF study includes creating a water line replacement program that can be implemented and practiced every year. This was supported with additional prioritization in the AMP.

The LMWD distribution system is made up of nearly 200 miles of pipeline. The system consists of pipelines ranging in sizes from 2” to 24”. Pipe types include, PVC, cast iron, asbestos cement, and epoxy coated steel (CPWWF, 2004).

Approximately 75% of the pipe in the system is 8-inches or less in diameter. A concern for LMWD is that there are too many 2-inch lines that are inadequate in supplying customers during peak day demands. The 2-inch diameter pipelines create substantial head loss during peak use that result in insufficient water pressures through-out the system. Because of this, we portend risk of regulatory non-compliance and are recommended to replace lines (AMP, 2008).

A summary of proposed water distribution system pipelines has been prepared using LMWD’s AMP. Recommended improvements are for increasing pipe sizes and to purchase

material not prone to excessive failures. This proposition is a recommended program for only the highest priority distribution system improvements with additional improvements in later years. Through the 2011 Bond LMWD was able to begin the line replacement program. In the alley of Adams and Washington, LMWD replaced thousands of feet of line, 2000 ft of line on Mesquite in Laguna Vista, seven to eight thousand ft. on Gulf Blvd in South Padre Island, and will begin Beach Blvd around July 2017. Finishing up Beach Blvd in 2018 should complete the line replacement project.

## 2.4 Billing Cycles

Billing Cycle Process: There are three billing cycles for LMWD. The billing cycle determines when the water meter is read and the due date. It is an integral part of the remote reading process.

LMWD's utility bills are mailed out monthly or approximately every 30 days. There is a constant rotation of billing dates month to month, however there is a general billing date expectation customers understand.

LMWD billing cycles are as follow: Cycle one includes customers who live in Laguna Heights and the town of Laguna Vista, Cycle two includes customers who live in Port Isabel, and cycle three includes those who live in South Padre Island (Figure 3: Billing Cycles). The customers address dictates what billing cycle he lands under therefore; an address cannot be changed to another location.

Consumption is determined by the verification of several books through-out the three cycles. On average, Laguna Heights and Laguna Vista used 22% of the entire consumption from 2013 to 2016, Port Isabel used 23%, and South Padre Island used 55%.

As shown in the Water Utility Profile (Appendix A), LMWD served a population of 19,086 through 6,362 connections and is comprised of ten class types; they are residential, commercial industrial, churches, schools, hotels, mobile homes, apartments, restaurants, condominiums, and unassigned.

## 2.5 Treated Wastewater system and Use

The LMWD operates and maintains regional wastewater facilities where wastewater from the service area is collected and pumped into four Wastewater Treatment Plants (WWTP). In 1974, the mainland WWTP was built in Port Isabel with a capacity of 1.1 MGD. The Laguna Vista WWTP was built in 2005 with a treatment capacity of 0.65 MGD. South Padre Island has two WWTP's. One is located in Isla Blanca and the other is located at Andy Bowie. IBWWTP was built in 1974 with a capacity of 2.6 MGD and ABWWTP was built in 1974 with a capacity of 1.5 MGD (Figure 5: Wastewater System).

The Laguna Madre area has experienced increasing wet weather impacts which result in un-anticipatable infiltration or inflow. This can create a major burden in regards to expenses and public health because of the risk of potential overflow of untreated wastewater. Through-out the past 5 years, there has been rehabilitation to the wastewater collection system and

treatment facilities, however more rehabilitation is required. This year, 2017, major rehab has begun for the IBWWTP and PIWWTP. Continuing this rehabilitation and maintenance to the system and facilities will help LMWD reduce and prevent the occurrence of sewer overflows and regulatory penalties.

The AMP, completed in 2008, identified 245,725 feet of wastewater collection pipeline in poor condition. Many factors contribute to the condition of this pipe. Some of the biggest, natural contributors are soil conditions, elevation of ground water, and root intrusion. Because of these, the pipes are subject to cracks, leaks, infiltration, and corrosion. Grease build up is another unavoidable factor that accelerates the life span of the wastewater collection pipeline. When these types of issues arise, LMWD's solution has been to find, fix or replace failed pipe sections. The expenses considered to maintain this program are labor, materials and equipment. This find and fix approach can be costly and inefficient. There is a need to comprehensively address these area wide problems that are contributing to redundant and inefficient spot repairs.

One of the main goals for the LMWD is to find the best available technology that can be used in the design, construction, operation and maintenance of the collection system. Currently, we have begun a grease control program and pipeline maintenance program in order to extend the life of the system.

Wastewater Collection Systems Rehabilitation/Replacement: Through the AMP, portions of the LMWD collection system warrant replacement. Projects have been identified and defined in scope of highest priority based on system wide pipe reaches and pipe diameter. Costs have been developed for each set and a strategy is in place.

In 2013, LMWD contracted out the rehabilitation of most manholes in Port Isabel, cement manholes in Laguna Vista and replaced 2100ft of line on Ebony Ln in Laguna Vista. These projects were initiated on January 7 2013 and completed before the end of the year.

## 2.6 Service Area and Water Use Projections

LMWD is located at the eastern edge of Cameron County. The three municipalities served are South Padre Island, Port Isabel, and the Town of Laguna Vista including the unincorporated area of Laguna Heights.

LMWD's last 5 years of treated water pumped into the distribution system averages out to 1,281,289,000 gallons. It is estimated that every year the demand rises about 120,000 gallons. The system demand fluctuates depending on seasonal water usage, and the amounts of visitors South Padre Island has at any given time. LMWD currently, averages 3.7 million gallons of treated water pumped per day. Based on this historical data, we are projected to pump 4.8 million gallons in 2020 and 5.0 million in 2025.



### 3.0 Problem Identification:

The challenges faced are population growth, increased demand, diminishing supplies, stringent regulations, and an aging infrastructure. The most significant issues for LMWD are water supply and distribution pipelines.

#### 3.1 Inadequate Raw Water Supply to Meet Expected Water Demands

According to the TWDB, the population growth for the LMWD service area, is estimated to be about 15% every ten years from 2020 to 2070. The projected population for 2020 is 16,688 with a raw demand of 7,047 acre-feet. In 2070, we are estimated to have a population of 31,085 with a raw water demand of 13,183 acre-feet. In preparation for this increasing growth, LMWD will continue to research other sources of water such as seawater desalination, brackish water and reuse. Keeping up with this proactive approach will help LMWD with its future demands.

#### 3.2 Identification and Reduction of Raw Water Losses:

In order to identify leaks, the LMWD personnel drives to the river pump station and back, along the pipeline, every time the river pump is on and whenever needed to verify of any situation in occurrence. In 2008, the LMWD contracted a company to perform a valve insertion and replacement process to meet AWWA standards. This would correct leaking valves and allow LMWD to meet regulatory standards.

At this time, the Amp completed, did not identify any other issues with LMWD's raw water distribution line. As previously mentioned, 1000 LF of the 36-inch line was replaced. The department of Transportation initiated this project due to their efforts to widen the road at the corner of FM 2480 and 1729.

#### 3.3 Identification and Reduction of Treated Water Losses:

In 2005, the LMWD committed to be more efficient in reducing treated water losses and has taken several steps to improve the effectiveness of treated water distribution system. Major distribution system efficiency projects include:

1. Metering: Universal Metering – The LMWD requires a meter at every connection to the water system including, but not limited to, residential, industrial, municipal, and commercial connections. The LMWD started the meter replacement program in December 2005 and it was completed in July 2006. All 5/8" meters were replaced. The 2", 4", and 6" meters were mostly replaced and if they weren't replaced they were retrofitted. Since then, LMWD has kept up with meter replacement in order to maintain its high standards for correct metering of the system.
2. Metering at point of diversion – For better accountability, the LMWD has replaced distribution meters and meters located upstream of the high service pump stations at each water plant. The distribution meters were updated accordingly and the meters at the water plants were switched from insertion tube meters to mag meters for more accuracy.

3. The AMP identified various areas where 2-inch water lines were very inadequate in supplying customers during peak demands. These pipelines create substantial head loss which create insufficient water pressures, portending risk of regulatory noncompliance. As a result, the District implemented a water line replacement program. This program began and was completed in 2016. The line replaced was on Gulf Blvd, nearly eight thousand feet long and ran to the North end of South Padre Island.
4. The LMWD maintains a total of 1,625,000 gallons of elevated storage capacity. Port Isabel, Laguna Vista, and Laguna Heights each have one elevated tower and South Padre Island has two. The existing elevated storage capacity is adequate for the next 15 years. The LMWD inspects all five elevated tanks every year to determine the tanks standing in order to comply with AWWA standards.

### 3.4 Raw Water Demand Reduction Possibilities

The LMWDs' four wastewater treatment plants use a small amount of their plants effluent to wash down, irrigate the plant grounds, and irrigate local highway medians. In the 1990's a reuse study was conducted and identified potential for irrigation needs.

Opportunities that have presented themselves are as follow:

1. Port Isabel Wastewater Treatment Plant – The LMWD is researching the opportunity to blend raw water and effluent water for potable reuse. This would reduce the amount of raw water that LMWD would have to divert from the Rio Grande and provide customers with economic benefits because of lower costs for residential, commercial and park irrigation.  
Currently, we are not using effluent water to blend with our source water. However, Port Isabel Wastewater Treatment Plant Modifications were completed on February 4, 2019, as a first step (improve water quality in secondary treatment) in moving forward toward the potable reuse program. Next phase of project, pending funding, would be design and construction of an Advanced Water Treatment Facility to treat effluent water that can blend with the source water to reduce diversions from the Rio Grande.
2. Andy Bowie Wastewater Treatment Plant – The birding center approached LMWD to request the use of this facility effluent water. It meets their needs and saves them from purchasing treated potable water.
3. Laguna Vista Wastewater Treatment Plant – The South Padre Island Golf course, located in Laguna Vista, currently uses raw water for irrigation. LMWD constructed a Cloth Media Filter (Reuse Authorization No. R14069-001) for Type I reclaimed water use. The authorization is used to fill two golf course (off-channel) amenity lakes at South Padre Island Golf Community.  
Neither the Andy Bowie wastewater treatment plant, nor the LVWWTP are currently using the effluent to irrigate or clean their areas.

#### 4.0 Water Utility Profile

Appendix A to this water conservation plan is the Laguna Madre Water District Utility Profile based on the format recommended by the TCEQ and the TWDB.

#### 5.0 LMWD Water Conservation Goals

Goal One: Water Loss – Proper accounting of all water use and production is the first step in establishing a goal for the reduction of water loss. Reliable metering will ensure that the number of total treated water and total billed water is accurately accounted for. In turn, the LMWD can provide a value of water loss and unaccounted-for -water.

Goal Two: Per Capita Usage – The average daily GPCD over the last five years has been 183 gallons. (Table 2: Gallons per capita per Day)

In 2012, this number was 171 gallons and has fluctuated over the past five years. LMWD is researching for ways to reduce this number, some of which are stated in this plan.

Goal Three: Water Recycling – The LMWD seeks the opportunity to reuse or reclaim at least 50% of its wastewater effluent. Type II reclaimed water use includes irrigation or other uses in areas where the public is not present during the time when irrigation activities occur or other uses where the public would not come in contact with the reclaimed water (Texas Administrative Code, 2009).

Goal Four: Alternative Source – The LMWD is evaluating resources such as saltwater desalination. Because of our location desalination would be plausible. Considering these types of alternative sources is the best way to resolve our long-term demand need.

#### 6.0 Water Conservation Plan Elements

##### Education and Public Information

- Public Education Campaign – The LMWD will promote water conservation by informing its customers of different methods to conserve water. The municipalities we serve tend to have night outs where LMWD can go out and speak to the customers and hand out informational packets.
- Brochures – Brochures on water conservation are handed out to new customers and any one of the public that request them. Available in these brochures are tips from the ABC's water conservation, Be Water Smart Indoors, Water Savings Tips, and Forty-Nine tips to Conserve Water (Spanish Version).
- LMWD Website – Water conservation, water saving tips and mandatory water conservation restrictions are found on the LMWD website, <https://www.lmwd.org/water-conservation>. LMWD updates this information as needed and also allows you to receive notifications on when they are made.
- Media – Press releases are published on a as needed basis. LMWD sends out informational tips, conservation tips and regulatory information.
- School and Community Education - The educational program includes going to our local schools and informing the students of the importance of water and water

conservation. LMWD will also “tour” the water plants so that the public can see where their water is treated and get a better understanding of what of water treatment. Some of the objectives for this education are:

- Learning where their tap water comes from
  - Learning about our raw water source and its troubles
  - Becoming familiar with the treatment process
  - Becoming familiar with some of the regulatory agencies and their regulations
  - Learning our main objective, which is providing safe drinking water to the public
- Drought Awareness Campaign – In addition to water conservation, during actual drought conditions, LMWD will educate and enforce a drought awareness campaign. A drought campaign should have similar information however drought regulation should take place. This should be publicized through local newspaper, television advertisement and possibly radio. All customers will receive detailed information of the drought conditions.

The overall goal of the Water Conservation Information Program is to provide information to the public for water conservation.

### **Water Rate Structure**

The District imposes an inverted block rate structure on both water and wastewater customers. All customers are subject to the conservation oriented rate structure so that everyone is equally encouraged to conserve.

The current rate structure enforces that high-volume users are penalized for high usage; in essence the more you use, the more you pay. Volumetric rates and charges increase depending on meter size. On September 26, 2018, the District approved water, wastewater, and raw water rates described in a five-year financial schedule included in Resolution No. 165-09-18 Amending Laguna Madre Water District Water, Wastewater, and Raw Water Rate Schedules, as shown in Appendix “B”.

### **Plumbing Fixtures and Retrofit Programs**

Building owners will be encouraged to replace plumbing devices with more efficient fixtures. LMWD currently provides conservation kits to its customers that include dye tablets, used to identify water leaks at home.

### **Water Savings Plumbing Code**

In June 25, 1986, the LMWD adopted a resolution that includes water conservation requirements for new construction and renovations. For example, toilets that were installed before 1980 would draw about 5.5 gallons per flush. Improved technology has made it possible to considerably save in water.

<b>Fixture</b>	<b>Standard</b>
Lavatory & Sink	No more than 2.2 gpm's at 60 pounds per square inch of pressure
Wall Mounted, Flush meter Toilets	No more than 1.6 gallons per flush
All other Toilets	No more than 1.6 gallons per flush
Urinals	No more than 1.0 gallons per flush
Drinking Water Fountains	Must be self closing
All Hot Water Lines	Must be insulated
Swimming Pools	New pools must have a re-circulating filtration equipment

### **Universal Metering, Meter Repair and Replacement Program**

All customers of the LMWD are metered. In December 2005, the LMWD implemented a meter change out program. The LMWD tested and replaced its customers' meters by July 2006. Normally, meters are tested on an as needed basis. The 2", 4" and 6" meters were mostly changed out, however all of the 5/8" meters were replaced. From 2006 to the present, meters bigger than 5/8", that were retrofitted have been totally replaced with new meters. Any meters with discrepancies, are verified and a water profile is provided if necessary. In 2019, LMWD is upgrading to an Advanced Metering Infrastructure (AMI) System to include a new network, software, and full meter replacement to get hourly reads. The technology upgrade will enhance the District's ability to conserve water through better communication with all stakeholders.

The LMWD currently has implemented the following:

1. Calibration requirements on a yearly basis for production and tap water effluent meters.
2. Meter repair and testing programs including procedures
  - This will ensure meter accuracy and efficiency
3. The LMWD will monitor unmetered water and metered water that is not billed. Unmetered water may consist of fire protection use, flushing mains, among other uses. Unmetered-unbilled water pertains to losses due to accounting errors, thefts, inaccurate meters and leaks.

### **Control of Unaccounted Water Use**

In 2008, in an effort to reduce raw water losses, the LMWD implemented the following:

1. The LMWD conducted water modeling which helped with the water conservation plan. This water modeling served as a baseline measure of water use and determined other existing conditions in the water system.
2. In 2012, the LMWD developed a report on water use and losses that was presented in the financial report.
3. Texas Water Code Section 1.0121(b) required retail public water utilities to conduct a water audit every five years, unless they have an active financial obligation with the Texas Water Development Board or have more than 3,300 connections, in which case they must conduct an audit annually. Four basic steps for a water audit includes:
  - a. Identify and quantify each source of water.
  - b. Identify, quantify and verify authorized metered water uses.
  - c. Identify and estimate unmetered water uses.
  - d. Identify and estimate water loss.

### **Leak Detection and Repair Program**

The LMWD does not have a leak detection program in place. However, staff addresses leaks in the water distribution system when a customer calls in, when there is low pressure in the system, when there is no water, or when staff has been notified that water is visible on alleys and/or roadways. In addition, water plant operators monitor tank levels and pressure through a SCADA system at Water Pant #2. This information is a monitoring system that can be used to indicate differentials through the LMWD system.

The LMWD will continue taking the following actions to improve and prevent continuing water loss in the distribution system:

1. The LMWD will continue with line replacement; as it is an ongoing program to maintain high standards with high quality materials.
2. Establish a leak detection program in the distribution system.
  - a. Year 2019 AMI System upgrade includes install of leak detection equipment for AC pipe 12" diameter and smaller. These pipes are the older waterlines in the system, which should be more closely monitored than newer, PVC pipe.
3. Continue with valve maintenance and replacement.

### **Pressure Control in the Distribution System**

The water distribution system provides economical and compatible facilities that are capable of furnishing sufficient water at suitable pressures. The system consists of almost 200 miles of underground water mains, two pump stations, two ground storage tanks, 2 clearwells, five elevated storage tanks, and approximately 6400 meters.

After treating the water, it is pumped into the distribution system with excess water being stored in the elevated tanks. The distribution network is laid out in a continuous looped system to circulate water and maintain constant system pressures of about 45 psi.

## **Water Recycling and Reuse**

As previously mentioned, the LMWD currently recycles water within their wastewater plants for non-potable use. This includes washing down stations and chlorine system. The LMWD will continue to pursue wastewater effluent reuse opportunities to accommodate future growth.

## **Conservation Programs for Industrial, Commercial and Institutional Customer (ICI)**

The LMWD will develop a water conservation program for ICI customers that will include the resources to implement efficient water management practices that will help them reduce operating costs for water and energy without sacrificing production quality. In addition, this program will help ICI customers become more efficient to reduce the impact of any potential mandatory water regulation brought by any water shortages. Best of all, a well-planned, efficient program will help extend the LMWD service area.

## **Conservation Additional Requirements (Population over 5,000)**

The Texas Administrative Code includes additional requirements for water conservation plans for drinking water suppliers serving populations over 5,000.

### **288.2(a)(2)(C) – Requirement for Water Conservation Plans by Wholesale Customers**

Should LMWD acquire a Wholesale Customer, a requirement in every wholesale water supply contract entered into or renewed after the adoption of the plan (by wither ordinance, resolution, or tariff), each successive wholesale customer develop and implement a water conservation plan or water conservation measures following the requirements of *Title 30, Part 1, Chapter 288, Subchapter A., Rule 288.2* of the Texas Administrative Code. The requirement will also extend to each successive wholesale customer in the resale of the water, between the initial supplier and customer, must provide that the contract for the resale of the water must have water conservation requirements so that each customer be required to implement conservation measures in accordance with the provision of this chapter.

## **Implementation and Enforcement**

The General Manager (GM) at the Laguna Madre Water District or his/her designee will be responsible for the implementation and enforcement of the Water Conservation Plan. In addition, will ensure that records are maintained in the administration building to prepare reports requested by TCEQ.

## **Coordination with Regional Water Planning Groups**

The District will be in coordination with the Lower Rio Grande Chair of Development Council at 311 North 15<sup>th</sup>, McAllen, TX 78501, for the Water Conservation Plans. A copy of the water conservation plan will be provided to the Regional Water Planning Group.

## **Periodic Review**

The LMWD personnel will ensure that water conservation goals are monitored and unaccounted water is identified. LMWD will update and inform the GM of the amendments made to the water conservation plan. It will meet current and future demands.

## **7.0 DROUGHT & EMERGENCY CONTINGENCY PLAN**

### **Purpose**

Drought and other uncontrollable circumstances can disrupt the normal availability of the District's water supply. Chapter 3 summarizes the Drought & Emergency Contingency Plan for the LMWD. The purpose of this Plan is to conserve and limit the demand of water during an emergency state.

The General Manager or his/her designee shall have the authority to implement the Drought & Emergency Contingency Plan including initiating and terminating applicable drought stages. All persons, customers of the LMWD must fully comply with the terms of this plan.

The Drought & Emergency Contingency Plan includes the following elements:

- Criteria for Initiation and Termination of Plan Stages
- Drought Response Stages
- Public Education
- Coordination with Regional Water Planning Groups
- Implementation and Enforcement
- Application



## 7.1 Criteria for Initiation and Termination of Plan Stages

The following trigger conditions indicate when drought contingency measures will be put into effect. Triggers are set for mild, moderate and severe conditions.

### A. Stage 1 Triggers –

#### Guidelines for Initiation:

Voluntary conservation is the first phase of the Plan. It is always in effect unless a higher phase is required and enacted.

#### Goal:

Achieve a voluntary reduction in water use for Laguna Madre Water District.

#### Voluntary Water Use Restrictions:

1. Recommend that all landscape areas be irrigated on a twice per week or less schedule (as discussed under Phase 2) and that such irrigation occur from midnight through 7:00am or other schedules as determined by the General Manager.
  2. Recommend water customers to discontinue water use for non-essential purposes such as washing any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard surface areas.
- B. Stage II Triggers – Mild Water Shortage Conditions

#### Guidelines for Initiation:

1. When the level of U.S. water stored in Amistad and Falcon Reservoirs reaches 51 % or 1,660,000AF (or below). When the level of water is, above this amount, this phase is eligible to be terminated.
2. Average daily water use is about 46% of system capacity.
3. The consumption of water rights based on quarterly capacity are:
  - 1<sup>st</sup> Quarter - 20%
  - 2<sup>nd</sup> Quarter – 40%
  - 3<sup>rd</sup> Quarter – 70%
4. The availability of raw water is low
5. Net storage of District’s raw water reservoirs are at 75% and continually decreasing on a daily basis.

#### Guidelines for Termination:

1. Stage 2 of the Drought Contingency Plan may be rescinded when the conditions listed as triggering situation have ceased to exist for a period of three (3) consecutive days.

Goal:

The goal for stage 2 is a three percent reduction in average daily water demands. This goal will be measured based on the average water use for thirty (30) days prior to the initiation of the stage.

Water Use Restrictions:

Customers are asked to conserve water.

1. Landscape irrigation will be permitted from 7:00pm through 7:00 am and on designated watering days.
    - Monday & Thursday – Laguna Heights and Laguna Vista
    - Tuesday & Friday – South Padre Island
    - Wednesday & Saturday – Port Isabel
  2. Use of water to wash any motor vehicle, truck, trailer, boat, airplane, and other mobile equipment will be prohibited except of the landscape watering days described above.
  3. Water use for non-essential purposes is prohibited.
  4. The District implements provisions for Raw Water customers as follows:
    - a. Raw Water customers may obtain potable water from the District's existing water main(s) when raw water provided is not sufficient to meet Owner's irrigation needs.
    - b. Raw water availability is based on the use of excess water rights that are subject to proration when the level of U.S. water stored in Amistad and Falcon Reservoirs is below 50% capacity.
    - c. The District may ration or curtail delivery of raw water to meet potable water demand requirements and remain within Authorized Water Right designated by Texas Commission on Environmental Quality's Rio Grande Watermaster.
- C. Stage III Triggers – Moderate Water Shortage Conditions

Guidelines for Initiation:

1. During peak demand days such as Texas Week, Easter, Memorial Day and Labor Day
2. When the level of US water stored in Amistad and Falcon Reservoirs reaches 25% or 834,000 AF (or below). When the level of water is, above this amount, this phase may be terminated.
3. Net storage in the District's raw water reservoirs is at 50% and continually decreasing on a daily basis.
4. The availability of raw water is low.
5. The availability of water rights based on quarterly capacity.
  - 1<sup>st</sup> Quarter – 22%
  - 2<sup>nd</sup> Quarter – 46%

3<sup>rd</sup> Quarter – 81%

Guidelines for Termination:

1. Stage 3 of the Drought Contingency Plan may be rescinded when the conditions listed as triggering situations have ceased to exist for a period of three consecutive days. Upon termination of Phase 3, the restrictions under Phase 2 remain in effect.

Goal:

The goal for stage 3, is a five percent (5%) reduction in average daily water demands. This goal will be measured based on the average water use for thirty days prior to the initiation of the stage.

Water Use Restrictions:

1. During Texas Week, landscape irrigation will be restricted from 9:00am the Friday before the actual date of Spring Break through Monday at 9am. Peak demands on other Holidays falling on a Tuesday, Wednesday, or Thursday will have restriction beginning at 9 am a day before the holiday ending a day after at 9 am. Holidays falling on Friday through Monday will have restrictions beginning on Friday at 9am and ending on Monday at 9am.
2. Landscape irrigation will be permitted on designated watering days:
  - a. Watering will be permitted as follows:
    - Monday & Thursday – Laguna Heights and Laguna Vista
    - Tuesday & Friday – South Padre Island
    - Wednesday & Saturday – Port Isabel
  - b. Landscape irrigation with a hand-held garden hose, soaker hose, hand-held bucket or water can of no more than 5-gallon capacity, or drip irrigation.
  - c. Landscape irrigation time will be from 7:00pm to 7:00am
3. Commercial nurseries and other similar establishments may follow these water restrictions:
  - a. With hand-held buckets or water cans from 7:00pm to 7:00am
  - b. Drip or sprinkler irrigation systems from 7:00pm to 7:00am
4. Water use for non-essential purposes is prohibited.
  - a. Between the hours of 6:00am to 9:00am and 6:00 pm to 9:00pm
5. Permitting or maintaining defective plumbing in a home or business is prohibited.
6. Operation of any outdoor ornamental fountain or pond for aesthetic or scenic purposes is prohibited, except where necessary to support aquatic life such as fountains or ponds equipped with a water recirculation system.

7. Landscape irrigation variances are available but customers need to apply by mail, facsimile, or email. The information required is their name, address where the new landscape is to be installed, and the date of installation.
8. The District implements provisions for Raw Water customers as follows:
  - a) Raw water customers may obtain potable water from the District's existing water main(s) when raw water provided is not sufficient to meet Owner's irrigation needs.
  - b) Raw water availability is based on the use of excess water rights that are subject to proration when the level of U.S. water stored in Amistad and Falcon Reservoirs is below 50% capacity.
  - c) The District may ration or curtail delivery of raw water to meet potable water demand requirements and remain within Authorized Water Right designated by Texas Commission on Environmental Quality's Rio Grande Watermaster.

D. Phase IV Triggers – Severe Water Shortage Conditions

Guidelines for Initiation:

1. When the level of US water stored in Amistad and Falcon Reservoirs reaches 15% or 504,600 AF (or below). When the level of water is, above this amount, this phase may be terminated.
2. When a condition related to unexpected circumstances, such as a major problem on the water system due to natural disasters or unanticipated restriction on the raw water delivery system that immediately diminishes the LMWD's ability to deliver a normal water level.
3. Net storage in District's raw water reservoirs is at 25% and is continually decreasing on a daily basis such that a more serious problem may develop.
4. Water Demand is exceeding the system's capacity on a regular basis.
5. Rio Grande River level is so low that the River Pumps cannot pump the daily raw water demand.
6. All raw water is being pumped from the District's storage reservoirs and all replenishment of raw water reservoirs has stopped.
7. The availability of water rights based on quarterly capacity"
  - 1<sup>st</sup> Quarter – 24%
  - 2<sup>nd</sup> Quarter – 50%
  - 3<sup>rd</sup> Quarter – 89%
8. Contamination of the water supply and/or transmission and distribution system due to hurricanes, freezes and/or other natural disaster that may result in extraordinary loss of capability to provide service.
9. The alternative water source for the LMWD is to purchase "water" from another system or from a retail entity.

Guidelines for Termination:

Phase 4 of the Drought Contingency Plan may be rescinded when the conditions listed as triggering situations have ceased to exist for a period of three consecutive

days. Upon termination of Phase 4, the restrictions imposed under Phase 3 and Phase 2 remain in effect.

Goal:

The goal for Stage 4 is to restrict water usage to allow the LMWD's system to recover from the emergency condition.

Water Use Restrictions:

1. Water use for non-essential purposes is prohibited.
  - a. Landscape water irrigation.
  - b. Washing of commercial or noncommercial automobiles, trucks, airplanes and other mobile equipment.
  - c. Water of golf courses.
  - d. Use of fountains and artificial waterfalls.
2. The use of fire hydrants for any purpose other than firefighting is prohibited. The Water District's General Manager may permit the use of metered fire hydrant water to clear or clean sanitary or storm sewers.
3. The use of water by golf courses for landscape irrigation is prohibited except:
  - a. Areas designated as tees and greens.
  - b. Between 7:00pm and 7:00am on designated watering days.
4. Industrial customers are required to implement an individual water conservation plan. Water Conservation Plans are subject to approval by the Water District's General Manager and/or his designee.
5. If the customer already has a water connection, a new water service connection is prohibited.
6. Restaurants will be prohibited from serving water to customers except when requested by the customer.
7. The use of water for the expansion of commercial nursery facilities is prohibited.
8. No applications for new, additional, expanded or increased-in-size water service connections, meters, service lines, or other water service facilities shall be allowed, approved or installed except as directed by the Water District's General manager.
9. Maximum amounts of monthly water usage and surcharges may be implemented during the emergency as directed by the LMWD's General Manager with approval of the Board of Directors.
10. The General Manager is authorized to take any actions deemed necessary to meet conditions resulting from the emergency.
11. Violation of this policy is subject to any or all of the following:
  - a. \$200 fine
  - b. Disconnection of service
12. Imposing of surcharges fee would be initiated.
13. The District shall curtail delivery of raw water. Raw water customers may obtain potable water from the District's existing water main(s) for essential purposes only.

## **7.2 Public Input**

The District can schedule a public meeting to provide public input into preparation and revision of this plan.

## **7.3 Continued Public Information and Education**

The LMWD will periodically provide its customers with information about the plan, including information about conditions under which stage of the plan will be initiated or terminated. The drought measures implemented will also be included in the plan. A continued report and emergency measures have been established and the public will be informed of the conditions and measures taken. The avenues to notify the customers or provide more details about the drought conditions include:

1. Posting the Notice of Drought conditions.
2. Letters will be sent to Mayors of Communities served by the LMWD.
3. Local Newspaper
4. Local Radio Stations
5. Customers will be notified by mail, regular board meetings and billing statements about existing drought conditions.

## **7.4 Coordination with Regional Water Planning Groups**

The District will be in coordination with the Lower Rio Grande Chair of Development Council at 311 north 15<sup>th</sup>, McAllen, TX 78501, for the Water Conservation and Drought Contingency Plan. A copy of the water drought contingency plan will be provided to the Regional Water Planning Group once is approved by the TCEQ and the Board of Directors of the LMWD.

## **7.5 Means of Implementation**

The General Manager or his/her designee, will be authorized by the Board of Directors of the LMWD to initiate a contingency measure when a trigger condition occurs. The District has been informed that such measures is necessary to protect public health, safety and welfare of customers.

## **7.6 Variances**

The General Manager will consider requests of water users for special considerations and will hear and decide on such requests. In special cases, the General Manager or his/her designee, is authorized to grant such variances from the terms of this Drought Contingency Plan if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the health, sanitation, or fire protection for the customer or the person requesting such variance.

Persons requesting a variance from the provisions of this plan shall file a written petition for variance with LMWD. All petitions shall be evaluated and approved by the General Manager.

- a. Name and address of the petitioner(s)
- b. Purpose of water use
- c. Specific provision(s) of the plan from which the petitioner is requesting relief
- d. Description of the relief requested
- e. Period of time for which the variance is sought
- f. Alternative water use restriction or other measures the petitioner is taking or proposes
- g. Other pertinent information

### **Drought Contingency Plan Definitions**

**Aesthetic use:** The use of water for fountains, waterfalls, landscape lakes and ponds where such use is entirely ornamental and serves no other functional purpose.

**Bucket:** Bucket or other container holding five gallons or less, used singly by one person.

**Customer:** Any person, company or organization using water supplied by the Water Supplier.

**Drip Irrigation:** An irrigation system (drip, porous, pipe, etc....) that applies water at low flow levels directly to the roots of the plant.

**Existing Landscaping Plant:** A landscaping plant existing after such period of time as to accomplish an establishment and maintenance of growth.

**Golf Course:** An irrigated and landscaped playing area made up of greens, tees, fairways, roughs, and related areas used for Golf.

**Hand-Held Hose:** A hose attended by one person, fitted with a manual or automatic shut-off nozzle.

**Hose-End Sprinkler:** A sprinkler that applies water to landscape plants that is piped through a flexible, moveable hose.

**Household Use:** The use of water, other than uses in the outdoor category, for personal needs or for household purposes such as drinking, bathing, heating, cooking, sanitation or cleaning, whether the use occurs in a residence or in a commercial or industrial facility.

**Irrigation System:** Also referred to as an in-ground or permanent irrigation system. A system with fixed pipes and emitters or heads that apply water to landscape plants.

**Landscape watering:** The application of water to grow or maintain landscaping plants, such as flowers, ground covers, turf or grass, shrubs, and trees. For purposes of this division, does not include:

- a. Essential use without waste of water by a commercial nursery to the extent, the water is used for production rather than decorative landscaping
- b. Application of water without waste to a non-commercial family garden or orchard (the produce of which is for household consumption only).
- c. Application of water in the morning before 7:00am and in the evening after 7:00pm by means of a bucket (not to exceed a 5-gallon capacity), hand-held hose, soaker hose, or properly installed drip irrigation system, immediately next to concrete foundation solely for the purpose of preventing substantial damage to the foundation or the structure caused by movement of the foundation.

**Landscape Irrigation use:** Water used for the irrigation and maintenance of landscaped areas, whether private or publicly owned, including residential and commercial lawns, lawns gardens golf courses, parks, athletic fields, right-of-way's and medians.

**Non-Essential Water Use:** Water uses that are neither essential nor required for the protection of public health, safety and welfare including:

- a. Landscape irrigation use, except otherwise provided in this plan
- b. Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle
- c. Use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas.
- d. Use of water to wash down buildings or structures for purposes other than immediate for protection.
- e. Flushing gutters or permitting water to run into any gutter or street.
- f. Use of water to fill, refill or add to any indoor/outdoor swimming pools or Jacuzzi types.
- g. Aesthetic water use, except where necessary to support aquatic life.



- h. Use of water from hydrants for construction purposes or any other purpose other than fire-fighting.

## UTILITY PROFILE FOR RETAIL WATER SUPPLIER

### CONTACT INFORMATION

Name of Utility:

Public Water Supply Identification Number (PWS ID):

Certificate of Convenience and Necessity (CCN) Number:

Surface Water Right ID Number:

Wastewater ID Number:

Contact: First Name:  Last Name:

Title:

Address:  City:  State:

Zip Code:  Zip+4:  Email:

Telephone Number:  Date:

Regional Water Planning Group:

Groundwater Conservation District:

Our records indicate that you:

- Received financial assistance of \$500,000 or more from TWDB
- Have 3,300 or more retail connections
- Have a surface water right with TCEQ

#### A. Population and Service Area Data

1. Current service area size in square miles:

Attached file(s):

File Name	File Description
Service Area Map.pdf	Service Area Map

## UTILITY PROFILE FOR RETAIL WATER SUPPLIER

2. Historical service area population for the previous five years, starting with the most current year.

Year	Historical Population Served By Retail Water Service	Historical Population Served By Wholesale Water Service	Historical Population Served By Wastewater Water Service
2016	20,436	0	20,436
2015	18,864	0	18,864
2014	18,894	0	18,894
2013	18,654	2,655	18,654
2012	18,543	0	18,543

3. Projected service area population for the following decades.

Year	Projected Population Served By Retail Water Service	Projected Population Served By Wholesale Water Service	Projected Population Served By Wastewater Water Service
2020	19,009	0	19,009
2030	22,645	0	22,645
2040	24,464	0	24,464
2050	29,918	0	29,918
2060	33,554	0	33,554

4. Described source(s)/method(s) for estimating current and projected populations.

Current data was retrieved from Monthly Operating Reports given to the state.  
 Projected data was estimated based on a 15 - 18 percent increase acquired from previous data.

## UTILITY PROFILE FOR RETAIL WATER SUPPLIER

### B. System Input

System input data for the previous five years.

Total System Input = Self-supplied + Imported – Exported

Year	Water Produced in Gallons	Purchased/Imported Water in Gallons	Exported Water in Gallons	Total System Input	Total GPCD
<b>2016</b>	1,382,208,163	0	0	1,382,208,163	185
<b>2015</b>	1,244,646,582	0	0	1,244,646,582	180
<b>2014</b>	1,613,473,333	0	10,540,500	1,602,932,833	231
<b>2013</b>	1,724,365,910	0	0	1,724,365,910	253
<b>2012</b>	1,844,420,000	0	300,000,000	1,544,420,000	227
<b>Historic 5-year Average</b>	1,561,822,798	0	62,108,100	1,499,714,698	215

### C. Water Supply System

1. Designed daily capacity of system in gallons 12,000,000
2. Storage Capacity
  - 2a. Elevated storage in gallons: 1,625,000
  - 2b. Ground storage in gallons: 2,550,000

## UTILITY PROFILE FOR RETAIL WATER SUPPLIER

### D. Projected Demands

1. The estimated water supply requirements for the next ten years using population trends, historical water use, economic growth, etc.

Year	Population	Water Demand (gallons)
2018	17,761	4,680,000
2019	18,073	4,720,000
2020	18,390	4,780,000
2021	18,713	4,820,000
2022	19,041	4,850,000
2023	19,375	4,880,000
2024	19,716	4,910,000
2025	20,062	4,950,000
2026	20,351	5,013,333
2027	20,683	5,040,092

2. Description of source data and how projected water demands were determined.

Our population is based on Year 2012-2015 data billing and production. The population estimate derived from billing data serves as the base, and the annual growth rate indicated by the TWDB populations was applied ( 2.16 growth) to calculate population projections from 2016 through 2025.

Water demand projections are Total Average Day Demands and are calculated for Permanent Residents ( 68 gpcd).

### E. High Volume Customers

1. The annual water use for the five highest volume **RETAIL** customers.

Customer	Water Use Category	Annual Water Use	Treated or Raw
Long Island Village	Residential	61,387,700	Treated
Schlitterbahn SPI	Commercial	37,691,900	Treated
Texas Pack Inc	Industrial	34,304,300	Treated
Cameron County Parks	Commercial	19,994,000	Treated
Pearl SPI	Commercial	19,512,800	Treated

2. The annual water use for the five highest volume **WHOLESALE** customers.

Customer	Water Use Category	Annual Water Use	Treated or Raw
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## UTILITY PROFILE FOR RETAIL WATER SUPPLIER

### F. Utility Data Comment Section

Additional comments about utility data.

### Section II: System Data

#### A. Retail Water Supplier Connections

1. List of active retail connections by major water use category.

Water Use Category Type	Total Retail Connections (Active + Inactive)	Percent of Total Connections
Residential - Single Family	4,997	73.36 %
Residential - Multi-Family	827	12.14 %
Industrial	7	0.10 %
Commercial	919	13.49 %
Institutional	59	0.87 %
Agricultural	3	0.04 %
Total	6,812	100.00 %

2. Net number of new retail connections by water use category for the previous five years.

Net Number of New Retail Connections							
Year	Residential - Single Family	Residential - Multi-Family	Industrial	Commercial	Institutional	Agricultural	Total
2016	90	36	3	23	2	0	154
2015	71	19	0	9	2	0	101
2014	13	3	0	0	0	0	16
2013	8	0	0	1	0	0	9
2012	7	0	0	2	1	0	10

## UTILITY PROFILE FOR RETAIL WATER SUPPLIER

### B. Accounting Data

The previous five years' gallons of RETAIL water provided in each major water use category.

Year	Residential - Single Family	Residential - Multi-Family	Industrial	Commercial	Institutional	Agricultural	Total
2016	502,901,000	255,093,400	34,680,900	411,974,100	18,789,500	11,154,700	1,234,593,600
2015	455,349,600	242,848,000	37,740,200	366,683,800	14,834,400	492,800	1,117,948,800
2014	467,239,600	239,490,000	30,271,300	381,029,600	15,782,600	629,900	1,134,443,000
2013	498,681,400	260,481,200	23,714,700	388,200,100	18,674,900	658,600	1,190,410,900
2012	532,479,700	271,146,200	22,654,100	425,366,700	19,664,500	400,300	1,271,711,500

### C. Residential Water Use

The previous five years residential GPCD for single family and multi-family units.

Year	Residential - Single Family	Residential - Multi-Family	Total Residential
2016	72	37	185
2015	66	35	101
2014	67	34	101
2013	71	37	108
2012	79	40	119
Historic 5-year Average	71	37	123

## UTILITY PROFILE FOR RETAIL WATER SUPPLIER

### D. Annual and Seasonal Water Use

1. The previous five years' gallons of treated water provided to RETAIL customers.

Month	Total Gallons of Treated Water				
	2016	2015	2014	2013	2012
<b>January</b>	83,819,000	75,019,000	84,626,000	88,970,000	77,544,000
<b>February</b>	92,663,000	75,825,000	86,976,000	108,513,000	68,055,000
<b>March</b>	109,253,000	85,944,000	94,372,000	132,083,000	91,180,000
<b>April</b>	98,137,000	88,629,000	111,135,000	114,415,000	105,120,000
<b>May</b>	111,457,000	101,924,000	121,089,000	129,891,000	112,602,000
<b>June</b>	125,210,000	120,720,000	139,139,000	139,248,000	120,848,000
<b>July</b>	169,293,000	147,550,000	154,554,000	153,717,000	128,542,000
<b>August</b>	150,480,000	158,494,000	146,992,000	140,279,000	128,172,000
<b>September</b>	122,175,000	100,068,000	89,088,000	103,915,000	91,530,000
<b>October</b>	109,164,000	91,227,000	97,002,000	101,040,000	77,254,000
<b>November</b>	92,911,000	79,436,000	74,835,000	88,300,000	94,435,000
<b>December</b>	89,999,000	79,472,000	76,914,200	78,984,000	96,212,000
<b>Total</b>	1,354,561,000	1,204,308,000	1,276,722,200	1,379,355,000	1,191,494,000



## UTILITY PROFILE FOR RETAIL WATER SUPPLIER

2. The previous five years' gallons of raw water provided to RETAIL customers.

Month	Total Gallons of Raw Water				
	2016	2015	2014	2013	2012
January	4,741,000	2,575,000	3,858,000	3,411,300	17,697,200
February	5,625,000	2,736,000	3,794,000	1,337,800	5,280,800
March	8,782,000	3,737,000	4,638,000	1,107,000	8,656,800
April	8,339,000	4,425,000	7,161,000	1,254,500	10,798,100
May	8,605,000	8,401,000	10,948,000	1,189,100	13,743,500
June	8,540,000	7,428,000	9,573,000	1,521,200	16,701,100
July	10,352,000	11,868,000	16,085,000	13,106,000	18,483,400
August	6,415,000	13,990,000	16,925,000	13,402,000	12,241,400
September	16,182,000	17,504,000	15,441,000	15,225,000	14,743,100
October	13,307,000	12,035,000	4,907,000	4,601,000	16,592,500
November	13,343,000	5,372,000	9,489,000	12,166,000	6,314,800
December	7,316,000	3,598,000	2,586,000	3,852,000	15,684,500
<b>Total</b>	111,547,000	93,669,000	105,405,000	72,172,900	156,937,200

3. Summary of seasonal and annual water use.

	Summer RETAIL (Treated + Raw)	Total RETAIL (Treated + Raw)
<b>2016</b>	470,290,000	1,466,108,000
<b>2015</b>	460,050,000	1,297,977,000
<b>2014</b>	483,268,000	1,382,127,200
<b>2013</b>	461,273,200	1,451,527,900
<b>2012</b>	424,987,900	1,348,431,200
<b>5 yr Average in Gallons</b>	459,973,820.00	1,389,234,260.00

## UTILITY PROFILE FOR RETAIL WATER SUPPLIER

### E. Water Loss

Water Loss data for the previous five years.

Year	Total Water Loss in Gallons	Water Loss in GPCD	Water Loss as a Percentage
2016	73,474,961	10	5.32 %
2015	100,618,899	15	8.08 %
2014	1,429,051,773	207	89.15 %
2013	-667,475,990	0	0.00 %
2012	2,029,450	0	1.27 %
<b>5-year Average</b>	187,539,818	46	20.76 %

### F. Peak Day Use

Average Daily Water Use and Peak Day Water Use for the previous five years.

Year	Average Daily Use (gal)	Peak Day Use (gal)	Ratio (peak/avg)
2012	3,694,332	4619433	1.2504
2013	3,976,788	5013839	1.2608
2014	3,786,649	5252913	1.3872
2015	3,556,101	5000543	1.4062
2016	4,016,734	5111847	1.2726

### G. Summary of Historic Water Use

Water Use Category	Average Daily Use (gal)	Percent of Connections	Percent of Water Use
<b>Residential - Single Family</b>	491,330,260	73.36 %	41.29 %
<b>Residential - Multi-Family</b>	253,811,760	12.14 %	21.33 %
<b>Industrial</b>	29,812,240	0.10 %	2.51 %
<b>Commercial</b>	394,650,860	13.49 %	33.17 %
<b>Institutional</b>	17,549,180	0.87 %	1.47 %
<b>Agricultural</b>	2,667,260	0.04 %	0.22 %

## UTILITY PROFILE FOR RETAIL WATER SUPPLIER

### H. System Data Comment Section

### Section III: Wastewater System Data

#### A. Wastewater System Data

1. Design capacity of wastewater treatment plant(s) in gallons per day: 5,850,000

2. List of active wastewater connections by major water use category.

Water Use Category	Metered	Unmetered	Total Connections	Percent of Total Connections
<b>Municipal</b>	311	0	311	4.66 %
<b>Industrial</b>	28	0	28	0.42 %
<b>Commercial</b>	6,119	0	6,119	91.64 %
<b>Institutional</b>	216	0	216	3.23 %
<b>Agricultural</b>	3	0	3	0.04 %
Total	6,677	0	6,677	100.00 %

3. Percentage of water serviced by the wastewater system: 100.00 %

## UTILITY PROFILE FOR RETAIL WATER SUPPLIER

4. Number of gallons of wastewater that was treated by the utility for the previous five years.

Month	Total Gallons of Treated Water				
	2016	2015	2014	2013	2012
January	62,791,000	71,021,000	72,510,000	75,645,000	69,519,200
February	56,933,000	63,150,000	73,669,100	66,405,100	74,059,000
March	77,034,000	86,804,000	78,780,000	81,534,000	85,575,000
April	60,829,000	71,675,300	78,441,000	65,271,000	80,565,000
May	67,794,000	81,359,000	73,489,000	72,676,000	78,560,000
June	79,786,000	84,184,000	80,832,000	80,633,000	91,929,000
July	84,429,000	98,072,000	96,620,900	101,788,000	107,167,000
August	68,559,000	78,188,000	87,384,000	82,725,700	89,525,000
September	58,073,000	63,797,000	79,169,000	72,799,000	75,765,000
October	55,375,000	78,119,000	72,510,000	65,826,000	75,663,000
November	58,767,000	56,331,000	68,394,000	62,442,700	67,552,000
December	57,089,000	53,653,000	62,462,000	64,914,000	66,603,000
<b>Total</b>	787,459,000	886,353,300	924,261,000	892,659,500	962,482,200

5. Could treated wastewater be substituted for potable water?

Yes     
  No

### B. Reuse Data

1. Data by type of recycling and reuse activities implemented during the current reporting period.

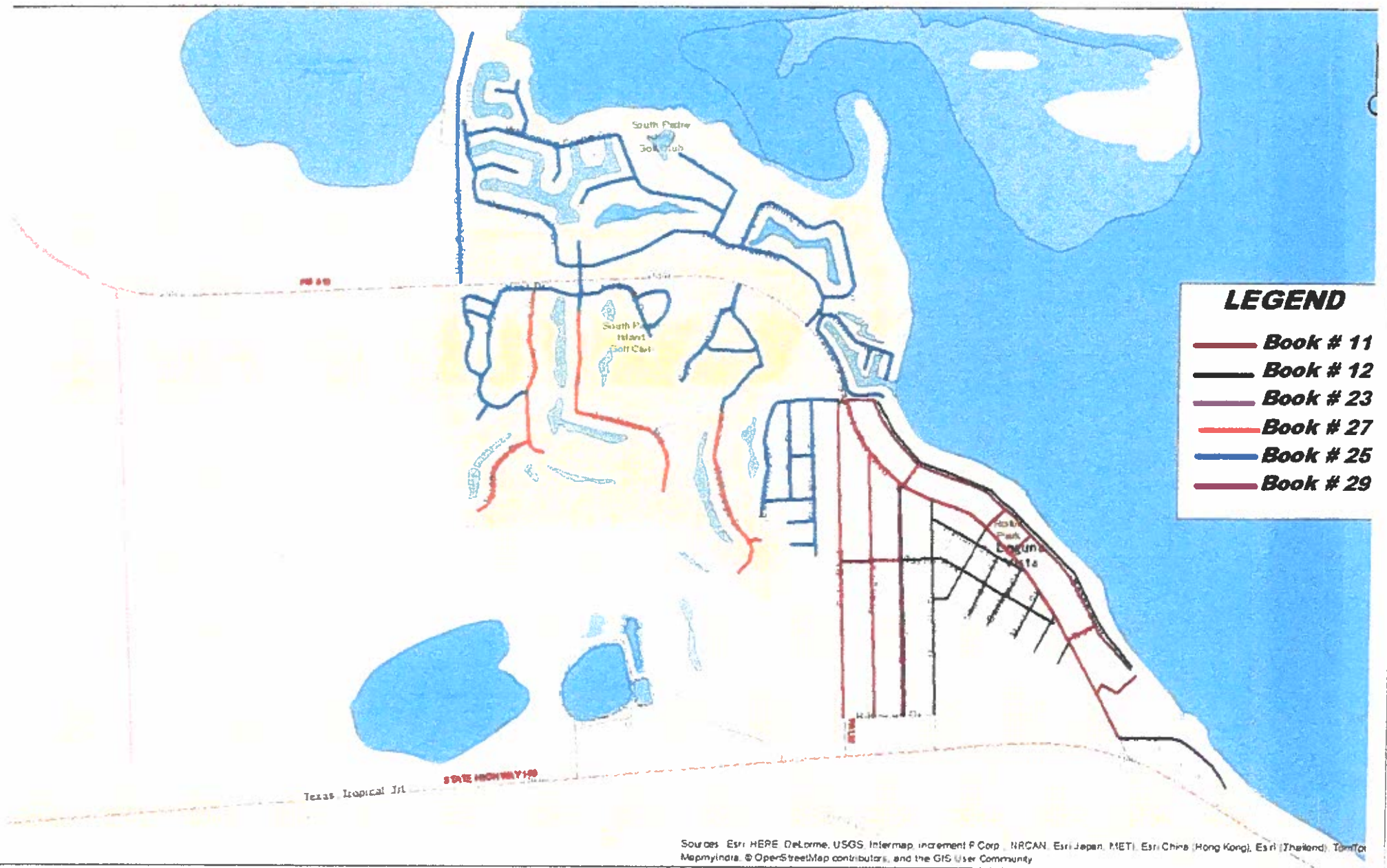
Type of Reuse	Total Annual Volume (in gallons)
On-site Irrigation	0
Plant wash down	0
Chlorination/de-chlorination	0
Industrial	0
Landscape irrigation (park,golf courses)	0
Agricultural	0
Discharge to surface water	0
Evaporation Pond	0
Other	0
<b>Total</b>	0

## UTILITY PROFILE FOR RETAIL WATER SUPPLIER

### C. Wastewater System Data Comment

Additional comments and files to support or explain wastewater system data listed below.

# LAGUNA VISTA (CYCLE 1)

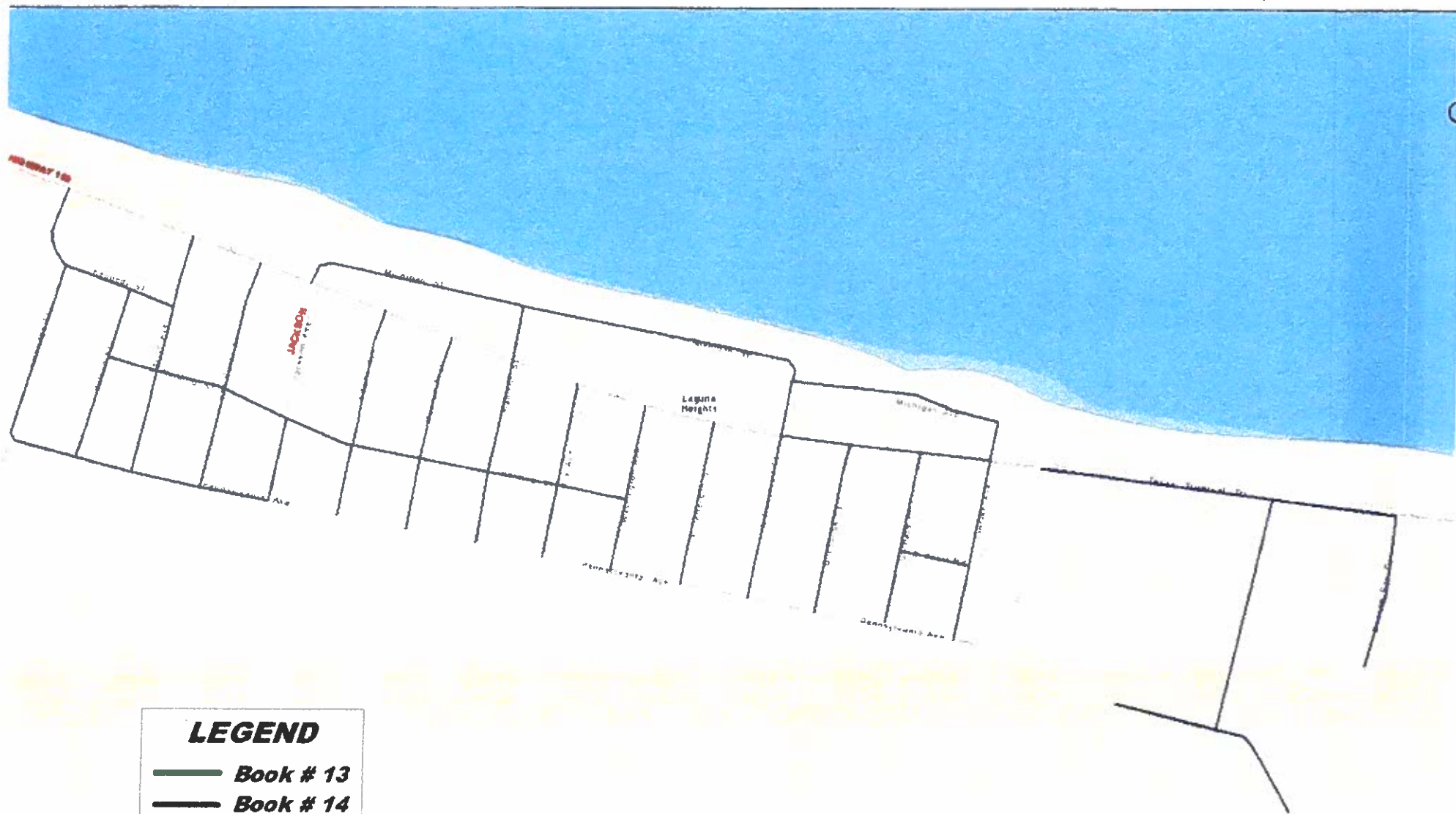


## LEGEND

- Book # 11
- Book # 12
- Book # 23
- Book # 27
- Book # 25
- Book # 29

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

# LAGUNA HEIGHTS (CYCLE 1)

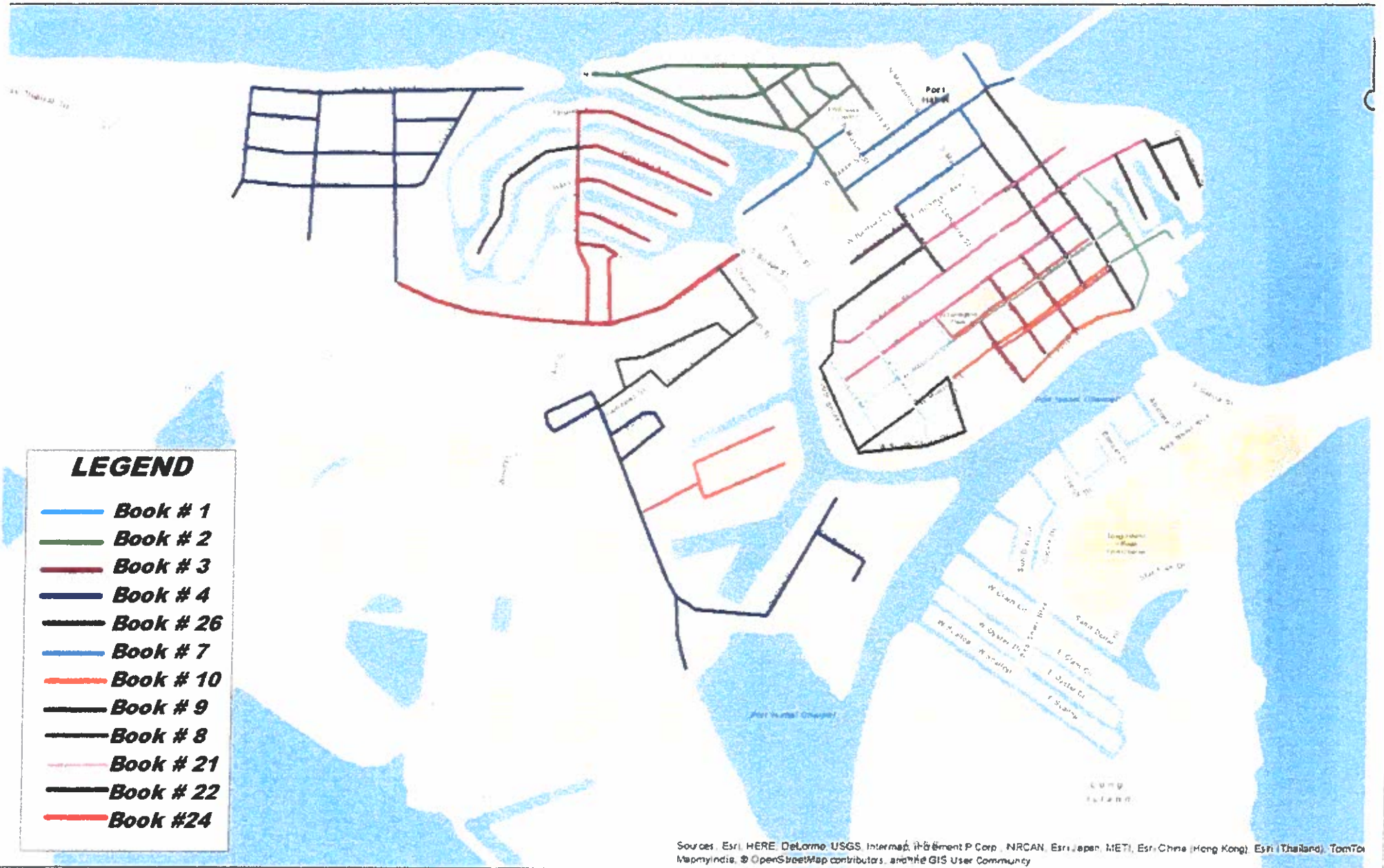


**LEGEND**

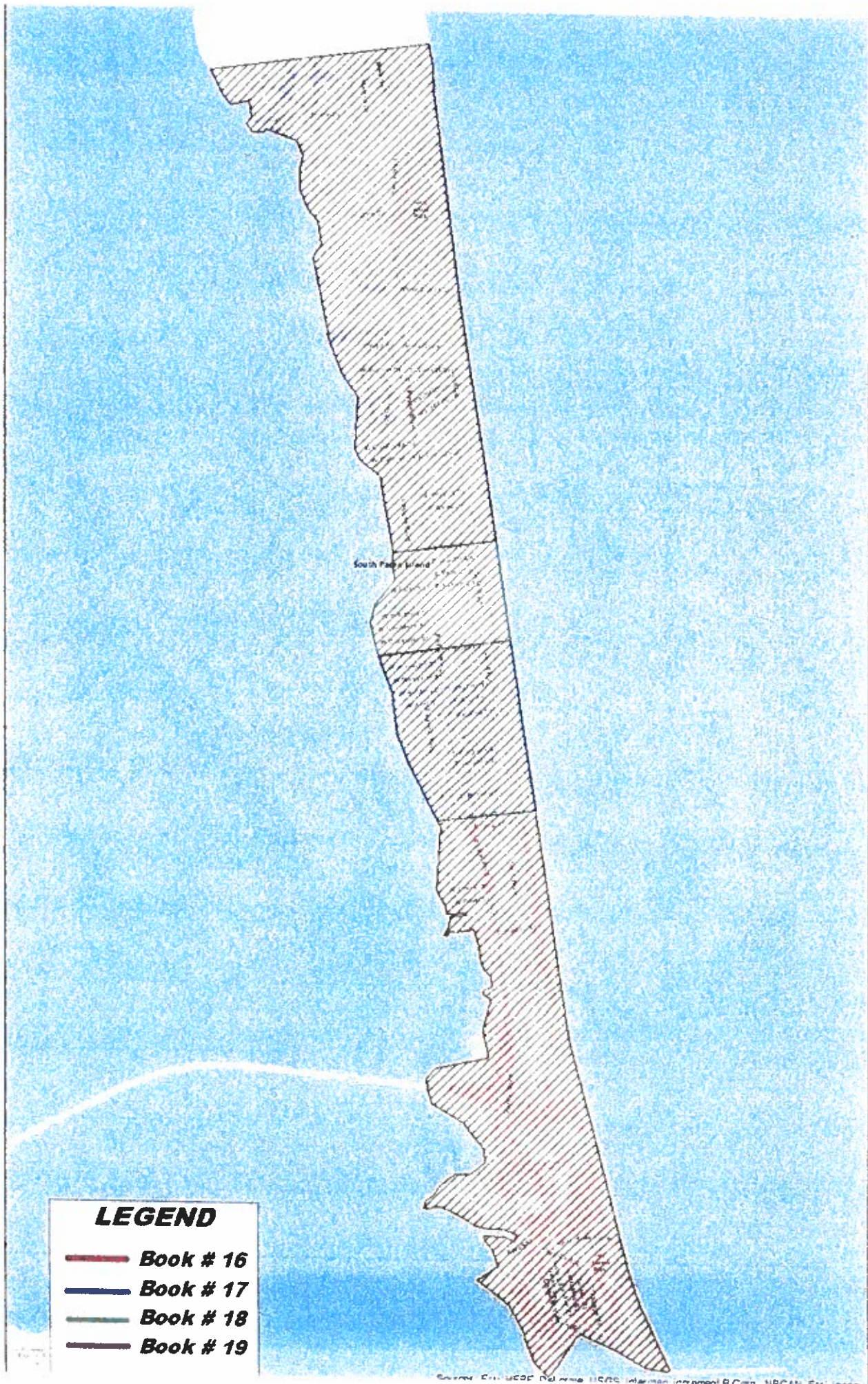
- Book # 13
- Book # 14
- Book # 15

Sources: Esri, HERE, DeLorme, USGS, Intermap, independent P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

# PORT ISABEL (CYCLE 2)







**LEGEND**

- Book # 16
- Book # 17
- Book # 18
- Book # 19

## WATER CONSERVATION PLAN 5- AND 10-YR GOALS FOR WATER SAVINGS

Facility Name: Laguna Madre WD

Water Conservation Plan Year: 2017

	Historic 5yr Average	Baseline	5-yr Goal for year <u>2022</u>	10-yr Goal for year <u>2027</u>
Total GPCD <sup>1</sup>	184	184	182	180
Residential GPCD <sup>2</sup>	108	108	107	106
Water Loss (GPCD) <sup>3</sup>	46	46	12.5	12.5
Water Loss (Percentage) <sup>4</sup>	25 %	25 %	7 %	7 %

1. Total GPCD = (Total Gallons in System ÷ Permanent Population) + 365

2. Residential GPCD = (Gallons Used for Residential Use ÷ Residential Population) + 365

3. Water Loss GPCD = (Total Water Loss ÷ Permanent Population) + 365

4. Water Loss Percentage = (Total Water Loss ÷ Total Gallons in System) x 100; or (Water Loss GPCD ÷ Total GPCD) x 100

APPENDIX "B"

**RESOLUTION NO. 165-09-18 AMENDING LAGUNA MADRE WATER DISTRICT  
WATER, WASTEWATER, AND RAW WATER RATE SCHEDULES**

**Whereas**, The District's Board of Directors may adopt and enforce all necessary charges, fees, or rentals, in addition to taxes, for providing any District facility or service; and

**Whereas**, by resolution adopted February 10, 2016, the District's Board of Directors adopted the schedule of water, wastewater, and raw water rates currently in effect; and

**Whereas**, the District's Board of Directors finds that the current rate schedule will not generate sufficient revenue to pay the expenses of the District; and

**Whereas**, the District finds that the water, wastewater, and raw water rates described in the five- year financial schedule attached to and made a part of this resolution are necessary to pay the expenses of the District and that the rates are just and reasonable; not unreasonably preferential, prejudicial, or discriminatory; and sufficient, equitable, and consistent in the application to each class of customers.

**NOW, THEREFORE, BE IT RESOLVED**, that the water, wastewater and raw water rates shown on the schedule attached to and incorporated into this resolution are hereby adopted.

**BE IT FURTHER RESOLVED** that the water, wastewater, and raw water rates shown on the attached schedule adopted by the Board of Directors pursuant to this resolution shall become effective beginning with the next billing cycle for each customer as of November 2018, October 2019, October 2020, October 2021, and October 2022.

PASSED AND ADOPTED THIS 26th DAY OF SEPTEMBER, 2018.

ATTEST:

  
SCOTT FRIEDMAN, CHAIRMAN

  
DOYLE WELLS III, SECRETARY



**Rate Increase Alternative #1**

	Current		Effective 18-Nov		Effective 19-Oct		Effective 20-Oct		Effective 21-Oct		Effective 22-Oct	
	Water	Sewer	Water	Sewer	Water	Sewer	Water	Sewer	Water	Sewer	Water	Sewer
<b>5/8" Meter</b>												
Monthly Charge	\$ 12.26	\$ 13.46	\$ 13.12	\$ 16.15	\$ 13.38	\$ 19.06	\$ 13.65	\$ 20.58	\$ 13.65	\$ 21.61	\$ 13.92	\$ 22.48
Usage Charge - Per 1,000 Gal												
4,001   10,000	2.47	2.73	2.64	3.28	2.70	3.87	2.75	4.17	2.75	4.38	2.80	4.56
10,001 20,000	3.89	4.23	4.16	5.08	4.25	5.99	4.33	6.47	4.33	6.79	4.42	7.06
20,001  Above	5.55	6.00	5.94	7.20	6.06	8.50	6.18	9.18	6.18	9.63	6.30	10.02
<b>1" Meter</b>												
Monthly Charge	23.07	21.83	24.68	26.20	25.18	30.91	25.68	33.38	25.68	35.05	26.20	36.46
Usage Charge - Per 1,000 Gal												
4,001   20,000	2.52	2.73	2.70	3.28	2.75	3.87	2.81	4.17	2.81	4.38	2.86	4.56
20,001 40,000	3.78	4.10	4.04	4.92	4.13	5.81	4.21	6.27	4.21	6.58	4.29	6.85
40,001  Above	5.32	6.12	5.69	7.34	5.81	8.67	5.92	9.36	5.92	9.83	6.04	10.22
<b>2" Meter</b>												
Monthly Charge	111.06	148.46	118.83	178.15	121.21	210.22	123.64	227.04	123.64	238.39	126.11	247.92
Usage Charge - Per 1,000 Gal												
15,001  100,000	2.63	2.97	2.81	3.56	2.87	4.21	2.93	4.54	2.93	4.77	2.99	4.96
100,001 200,000	3.95	4.46	4.23	5.35	4.31	6.32	4.40	6.82	4.40	7.16	4.49	7.45
200,001  Above	5.90	6.18	6.31	7.42	6.44	8.75	6.57	9.45	6.57	9.92	6.70	10.32
<b>4" Meter</b>												
Monthly Charge	418.64	340.56	447.94	408.67	456.90	482.23	466.04	520.81	466.04	546.85	475.36	568.73
Usage Charge - Per 1,000 Gal												
50,001   500,000	2.76	3.09	2.95	3.71	3.01	4.38	3.07	4.73	3.07	4.96	3.13	5.16
500,001 1,000,000	4.14	4.63	4.43	5.56	4.52	6.56	4.61	7.08	4.61	7.43	4.70	7.73
1,000,001 Above	5.69	6.30	6.09	7.56	6.21	8.92	6.33	9.63	6.33	10.12	6.46	10.52
<b>6" Meter</b>												
Monthly Charge	784.00	560.00	838.88	672.00	855.66	792.96	872.77	856.40	872.77	899.22	890.23	935.19
Usage Charge - Per 1,000 Gal												
50,001   500,000	2.60	2.70	2.78	3.24	2.84	3.82	2.89	4.13	2.89	4.34	2.95	4.51
500,001 1,000,000	3.90	4.05	4.17	4.86	4.26	5.73	4.34	6.19	4.34	6.50	4.43	6.76
1,000,001 Above	5.25	5.40	5.62	6.48	5.73	7.65	5.84	8.26	5.84	8.67	5.96	9.02
<b>8" Meter</b>												
Monthly Charge	840.00	896.00	898.80	1,075.20	916.78	1,268.74	935.11	1,370.23	935.11	1,438.75	953.81	1,496.30
Usage Charge - Per 1,000 Gal												
50,001   500,000	2.84	2.93	3.04	3.52	3.10	4.15	3.16	4.48	3.16	4.70	3.22	4.89
500,001 1,000,000	4.20	4.42	4.49	5.30	4.58	6.26	4.68	6.76	4.68	7.10	4.77	7.38
1,000,001 Above	5.69	5.89	6.09	7.07	6.21	8.34	6.33	9.01	6.33	9.46	6.46	9.84
<b>Raw Water Rate</b>												
Charge per 1,000 gallons	0.80		1.04		1.04		1.04		1.04		1.05	
<b>BOD/TS Rate per Pound</b>												
BOD Rate per lb		0.65		0.68		0.71		0.73		0.74		0.75
TSS Rate per lb		0.68		0.71		0.73		0.75		0.77		0.78